Mercury Update

Legislative Appropriations Sub-Committee

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Outline

- General Background on Mercury
- Health Concerns from Mercury
- Utah Specific Mercury Issues
  - Mercury Advisories
  - Great Salt Lake Issues
  - Coordination
- Needs for Next Steps

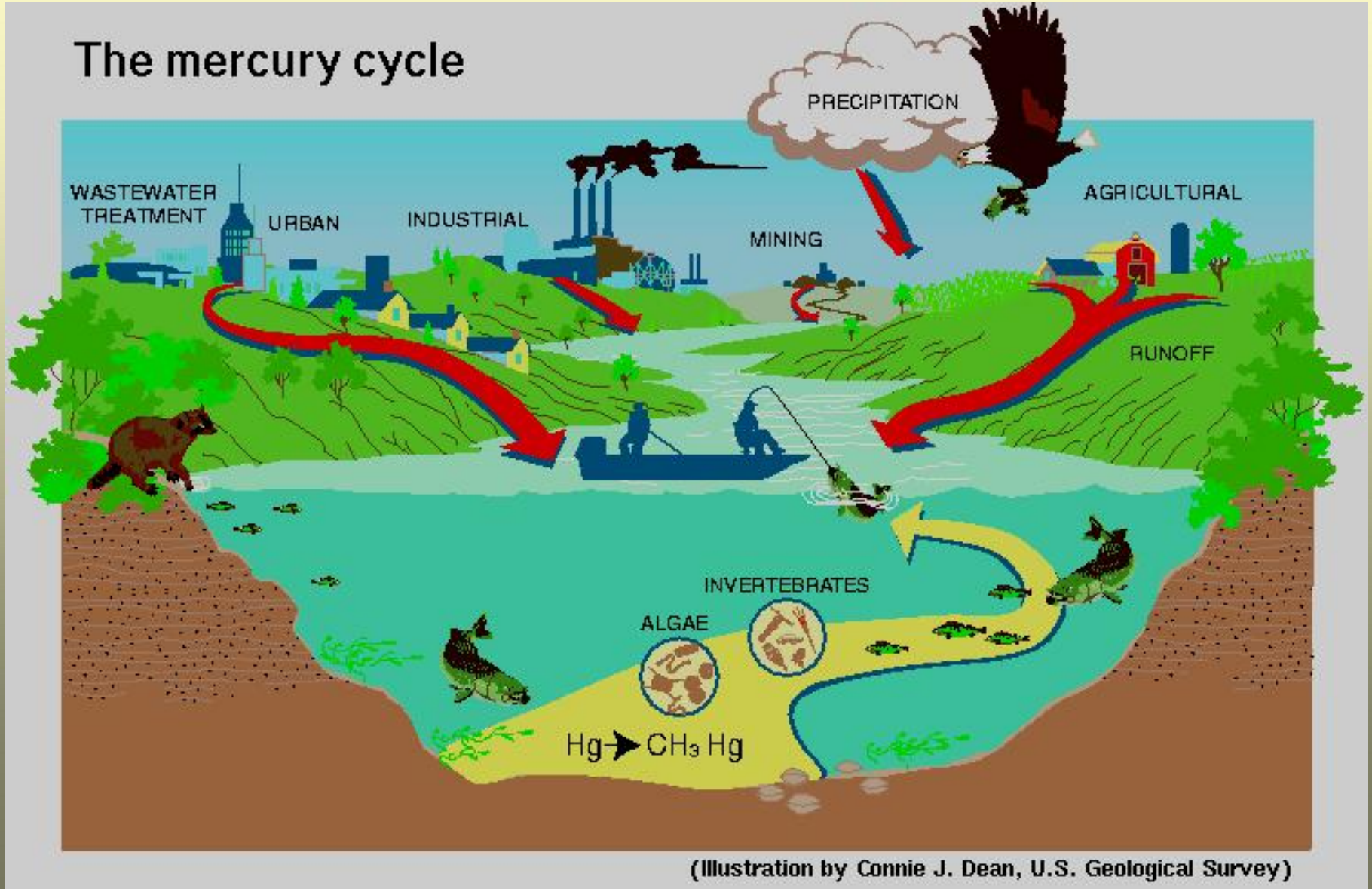
Mercury – 2 Key Forms

- Elemental Mercury – Inorganic (Hg)
  - Less toxic form; poorly absorbed if ingested
  - Non-bioaccumulative
  - Higher exposure if inhaled
  - Mercury in dental fillings
- Methylmercury – Organic (CH_3Hg)
  - Much more toxic; easily absorbed if ingested
  - Very slowly eliminated; half-life of 2-3 months
  - Bioaccumulative - fish and waterfowl tissue
  - Toxic to the nervous system and kidneys
  - Sensitive populations include pregnant women, infants and young children

Mercury Toxicity - Chronic Effects

- Birth defects
  - Visual problems, convulsions, cerebral palsy
- Mood and mental disorders
- Nervous system damage
- Memory loss
- Allergies
- Gum deterioration
- Hallucinations
- Skin irritation

The Mercury Cycle



Methylmercury

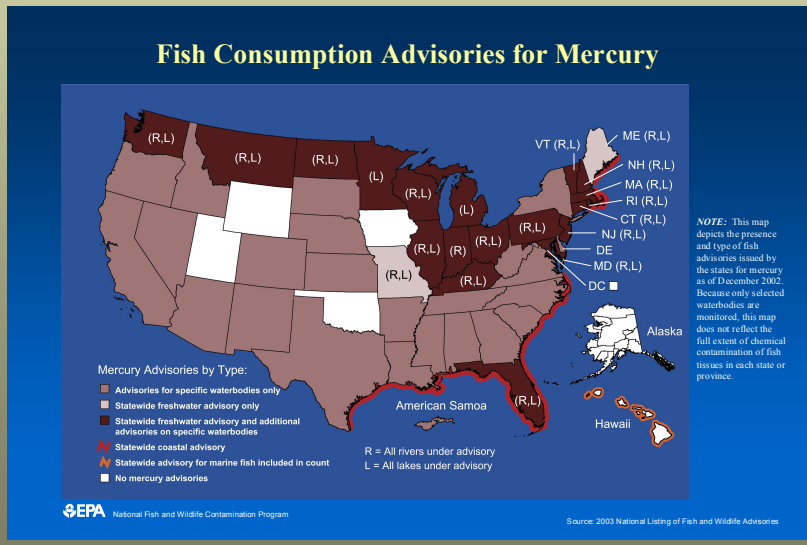
- Levels are higher in long-lived predator fish
- Some fish may have higher levels based on regional environmental pollution
- Many health departments issue health advisories on consumption of “sport” fish
- Small fish, mollusks and crustaceans have low levels unless in polluted waters

Infants & Children Vulnerability to Methylmercury

- Why are unborn infants, nursing infants and young children at risk?
  - Methylmercury easily passes from the mother's bloodstream to the fetus
  - Methylmercury has been found in mother's breast milk
  - Young children < 4-6 years of age:
    - Rapidly absorb nutrients, inorganics from the stomach
    - Have rapidly developing neurological systems

Mercury Issues: A National Perspective

- 46 states have issued mercury fish advisories
- Mercury deposition from air pollution an increasing concern
- Areas with no mercury sources are being impacted
- CDC estimates 1 in 6 U.S. women have high mercury levels
  - 600,000 infants/year at risk



Utah Data To Date

- Total samples to date – 1,171
- Total locations sampled - 220
  - 165 Rivers/streams
  - 54 Lakes/reservoirs
- 125 Samples above 0.3 mg/kg (11%)

Utah Mercury Fish Advisories (as of April 2007)

County	Site	Fish Species
Emery	Joes Valley Reservoir	Splake Trout
Garfield	Calf CK above Campground	Brown Trout
Grand	Mill Creek	Brown Trout
Iron	Newcastle Reservoir	Rainbow Trout
Morgan	Weber River below Morgan Lagoons	Brown Trout
Uintah / Carbon	Green River in Desolation Canyon	Channel Catfish
Wasatch	Jordanelle Reservoir	Brown Trout
Washington	Upper Enterprise Reservoir	Rainbow Trout
Washington	Gunlock Reservoir	Large Mouth Bass

Weber River

Waterfowl - GSL

Jordanelle Res.

Green River

Joe's Valley Res.

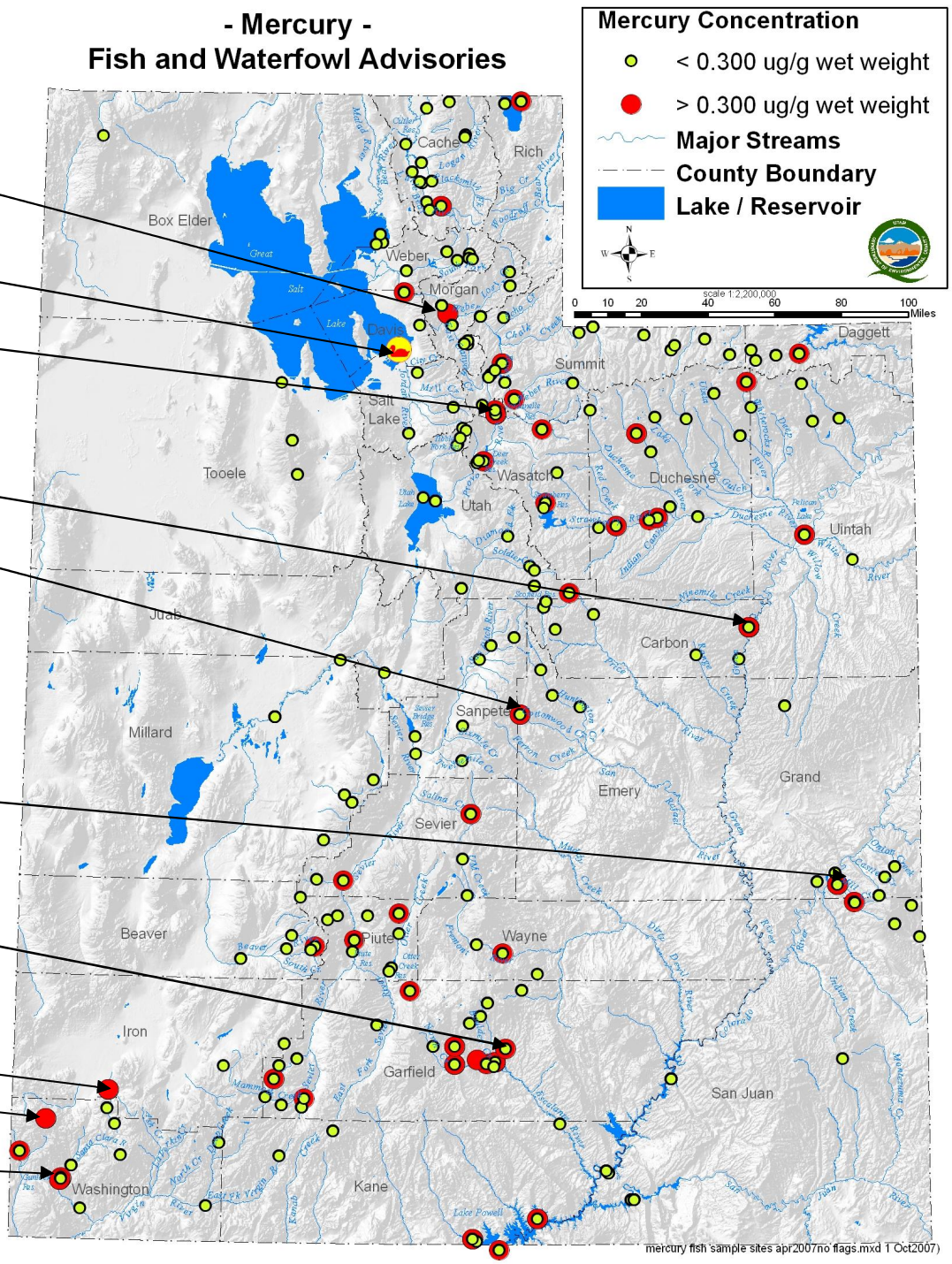
Mill Creek

Calf Creek

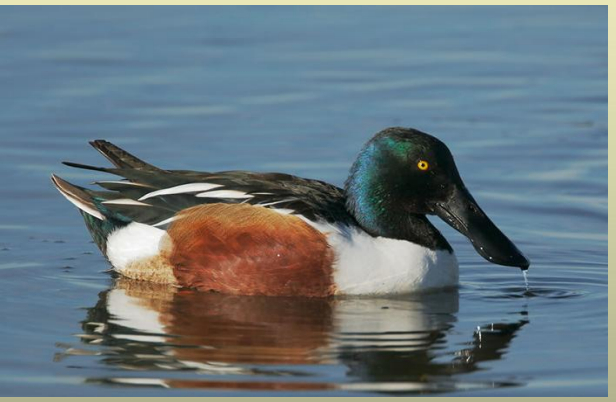
Newcastle Res.

Upper Enterprise Res.

Gunlock Res.



Duck Advisories



Northern Shoveler

Common Goldeneye

Cinnamon Teal

www.waterfowladvisories.utah.gov/advisories.htm

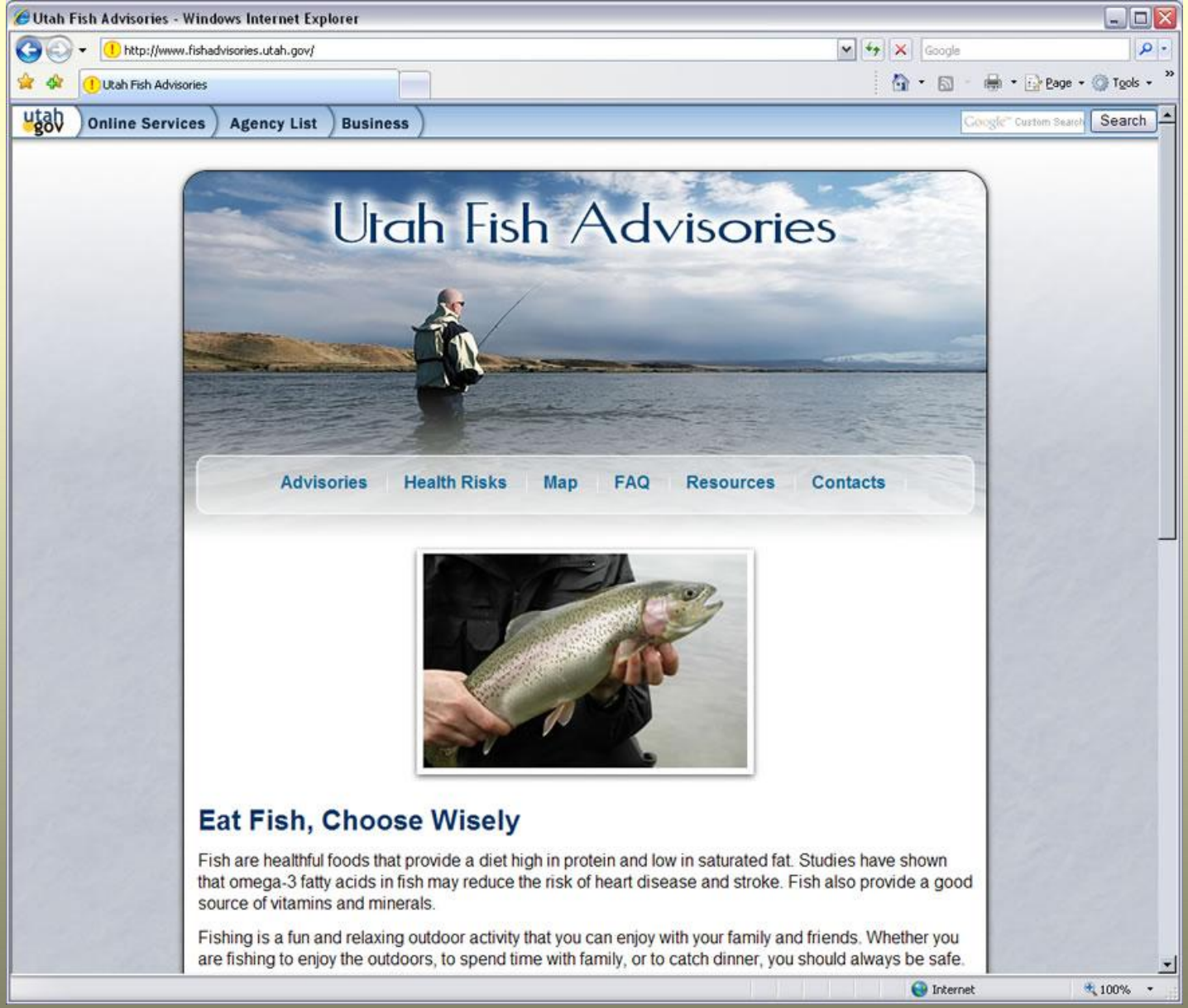
Mercury Advisory Process

- Collection of Fish/Waterfowl (Wildlife Resources & DEQ)
- Laboratory preparation and analysis (State Health or other laboratory)
- Assure Adequacy of Data Set (DEQ)
- Human Health Assessment (Dept. of Health)
- Coordination with Wildlife Resources, Dept of Health, DEQ
- Joint Advisory Issued

Fish Collection using

Electro-shocker

Sample Preparation and Analysis



www.fishadvisories.utah.gov/

Great Salt Lake Issues

- Very high mercury in deep brine layer
- Extremely high methyl mercury values
- Waterfowl mercury in tissue
- Sources???

Great Salt Lake Study Funding

- $66,000 from DEQ Restricted Account –
  - One time FY2008 appropriation –
- $87,000 from EPA grant –
- $6,900 match from USGS –

$160,000 Total to Date

- Workplan includes sediment, water, waterfowl food-chain analysis
  - Four Primary Focus Areas – Waterfowl Sites
  - Project Team: DNR, DEQ, USU, U.S. Geological Survey, U.S. Fish & Wildlife Service

Mercury Coordination

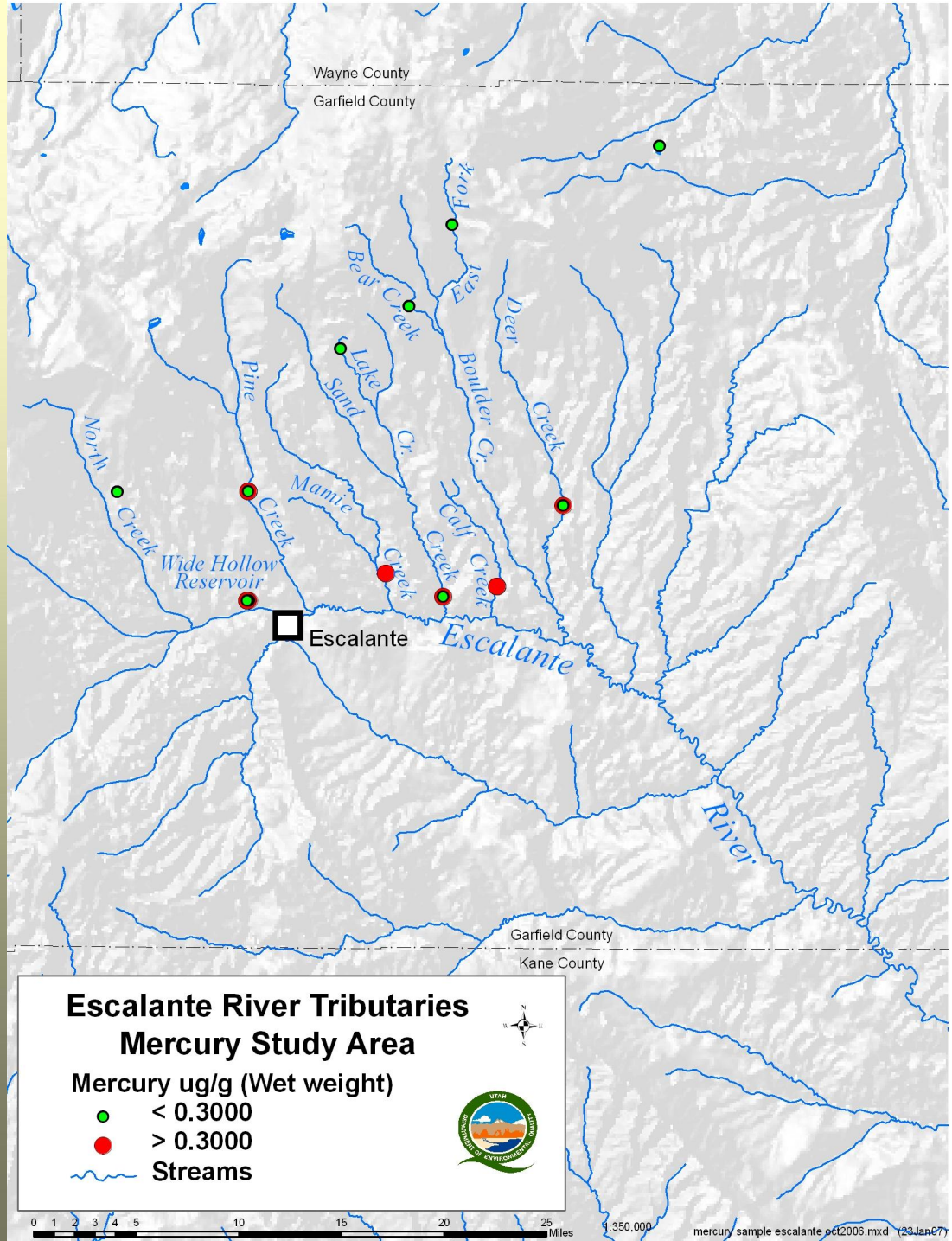
- DEQ Internal Workgroup
- Statewide Mercury Workgroup
- Interstate coordination

Needs for Next Steps

- Continue Fish Tissue Analysis
- Persistent Toxics FTE
- Start Source Assessment Work

Possible Sites for Source Assessment

- Escalante River Watershed
- Southwest Utah Reservoirs
- Others


Wayne County
Garfield County
East Fork
Bear Creek
Lake
Sand
Cr.
Pine
Creek
Boulder Cr.
Deer
Creek
North
Creek
Mamie
Creek
Calf
Creek
Creek
Wide Hollow
Reservoir
Escalante
Escalante
River
Garfield County
Kane County
Escalante River Tributaries
Mercury Study Area
Mercury ug/g (Wet weight)
< 0.3000
> 0.3000
Streams
0 1 2 3 4 5 10 15 20 25
Miles
1:350,000
mercury sample escalante oct2006.mxd (23 Jan 07)

Further Information on Mercury in Utah

DEQ Web page

- www.deq.utah.gov/Issues/Mercury/index.htm

Fish Advisories Web Page

www.fishadvisories.utah.gov/

Duck Advisories Web Page

www.deq.utah.gov/Issues/Mercury/duck_advisory.htm

What does this all mean to me personally?